Serial No. 09/648,525

IN THE CLAIMS

Please cancel claims 38, 41, 48, 55, 57 and 69.

Please amend the claims as follows:

1. (Twice Amended) An optical filter comprising:

a first optical element including a first reflective element for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function; and

a second optical element, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function;

whereby the shape of the first reflective filter function is different than the shape of the second reflective filter function, and the first wavelength band and the second wavelength band overlap spectrally.

Sub C1
B1

9. (Twice Amended) The optical filter of claim 1, wherein one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape.

Sub C1
B2

16. (Twice Amended) The optical filter of claim 2 further includes a compression device that axially compresses at least one of the first and second optical elements, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second optical elements.

Sub C10 B3

17. (Once Amended) The optical filter of claim 3 further comprising:

a first compressing device for compressing axially the first element to tune the first reflective element, wherein the first reflective element is written in the longitudinal direction in the first optical element; and

a second compressing device for compressing axially the second optical element to tune the second reflective element, wherein the second reflective element is written in the direction in the second optical element.

Sub C11 B4

20. (Once Amended) The optical filter of claim 2 further includes:

a first compressing device for axially compressing at least the first optical element to tune the first reflective element, responsive to a displacement signal, wherein the first reflective element is disposed axially along the first optical element; and

a displacement sensor, responsive to the compression of the first optical element, for providing the displacement signal indicative of the change in the displacement of the first optical element.

B5

Sub C17

21. (Once Amended) The optical filter of claim 20, wherein the displacement sensor includes a capacitance sensor coupled to the first optical element for measuring the change in the capacitance that depends on the change in the displacement of the first optical element.

Serial No. 09/648,525

86

Sub C14

22. (Twice Amended) A tunable optical filter comprising:

a tunable optical waveguide for receiving light, the optical waveguide comprising:

a first inner core having a first reflective element disposed therein, the first reflective element receiving the light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function; and

a second inner core having a second reflective element disposed therein, the second waveguide being optically connected to the second waveguide to receive the reflected first wavelength band of the light, the second reflective element reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function;

whereby the first wavelength band and the second wavelength band overlap spectrally.

23. (Twice Amended) The optical filter in claim 22, wherein the first and second reflective elements include a respective Bragg grating.

Serial No. 09/648,525

24. (Twice Amended) The optical filter of claim 22, wherein the tunable optical waveguide has an outer transverse dimension of at least 0.3 mm.

B6
Sub

25. (Twice Amended) The optical filter of claim 22, further comprising:

an optical directing device optically connected to the first and second inner cores; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element.

Sub
C14
end

27. (Twice Amended) The optical filter in claim 22, further includes a compressing device for axially compressing the tunable optical waveguide to tune the first and second reflective elements.

B7
Sub
C17

29. (Once Amended) The optical filter of claim 22, wherein the shape of the first reflective filter function is different than the shape of the second reflective filter function.

B8
Sub
C18

30. (Once Amended) The optical filter of claim 70, wherein the first and second reflection wavelengths are offset by a predetermined spacing.

32. (Twice Amended) A method for filtering an input light; the method comprising:

providing a first optical element including a first reflective element for receiving the input light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function;

B9

providing a second optical element, optically connected to the first optical element to receive the reflected first wavelength band of the light, including a second reflective element for reflecting a second wavelength band of light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function; whereby the shape of the first reflective filter function is different than the shape of the second reflective filter function; and

Sub C20

tuning one of the first and second reflective elements to overlap spectrally the first wavelength band and the second wavelength band.

36. (Twice Amended) The method of claim 32, wherein the tuning one of the first and second reflective elements comprises:

B10

offsetting the first reflection wavelength and the second reflection wavelength by a predetermined spacing.

Sub C21

Serial No. 09/648,525

37. (Twice Amended) A compression-tuned optical filter comprising:

a first optical waveguide including a first reflective element for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function; and

Sub/ C29

B/ Sm

a second optical waveguide, optically connected to the first optical waveguide to receive the reflected first wavelength band of the light, including a second reflective element for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function, wherein the shape of the first filter reflective function is different than the shape of the second reflective filter function, and the first wavelength band and the second wavelength band overlap spectrally,

wherein the at least one of the first and second optical waveguides has outer dimensions along perpendicular axial and transverse directions, a first portion of the at least one of the first and second optical waveguides having an outer dimension being at least 0.3 mm along said transverse direction, at least a portion of the first portion having a transverse cross-section which is continuous and comprises a substantially homogeneous material; and the at least one of the first and second optical

Sub C25

B10 Cont

waveguides being axially strain compressed so as to change the at least one of the first and second reflection wavelengths.

B11 Sub C28

39. (Once Amended) The optical filter of claim 29, wherein one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape.

B12

42. (Once Amended) The optical filter of claim 29, wherein the shape of the first reflective filter function is different than the shape of the second reflective filter function.

Sub C28

43. (Once Amended) The method of claim 32, further comprising tuning the other one of the first and second reflective elements to overlap spectrally the first wavelength band and the second wavelength band.

44. (Once Amended) The method of claim 32, wherein one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape.

Serial No. 09/648,525

Sub C28 B12 cont

45. (Once Amended) The method of claim 32, wherein at least one of the first and second optical elements comprises an optical waveguide having an outer cladding and an inner core disposed therein, wherein the at least one of the first and second reflective element comprises a grating disposed in a longitudinal direction of the inner core.

B13 Sub C30

49. (Once Amended) The optical filter of claim 37, wherein both of the first and second optical waveguides is tunable to change each of the respective first and second reflection wavelengths.

B14 Sub C32

51. (Once Amended) The optical filter of claim 37, wherein one of the first and second filter functions comprises one of a Gaussian, rectangular and ramp shape.

Sub C34 B15

54. (Once Amended) The optical filter of claim 37, wherein at least one of the first and second reflective elements includes a Bragg grating.

56. (Once Amended) The optical filter of claim 37 further includes a compression device that axially compresses at least one of the first and second optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second tunable elements.

Sub C35 B16

58. (Once Amended) An optical filter comprising:

B11

Sub C34

a first optical waveguide including a first reflective element for receiving light and reflecting a first wavelength band of the light centered at a first reflection wavelength, the first reflective element characterized by a first reflective filter function; and

a second optical waveguide, optically connected to the first optical waveguide to receive the reflected first wavelength band of the light, including a second reflective element for reflecting a second wavelength band of the light centered at a second reflection wavelength, the second reflective element characterized by a second reflective filter function;

whereby the first reflection wavelength and the second reflection wavelength are substantially aligned.

Serial No. 09/648,525

61. (Once Amended) The optical filter of claim 58, further comprising:

an optical directing device optically coupled to the first and second optical waveguides; the optical directing device directing the light to the first reflective element, directing the first wavelength band reflected from the first reflective element to the second reflective element.

5/18

Sub C38

62. (Once Amended) The optical filter of claim 58, wherein one of the first and second reflective filter functions comprises one of a Gaussian, rectangular and ramp shape.

8/19

Sub C40

64. (Once Amended) The optical filter of claim 58, wherein at least one of the first and second reflective elements includes a Bragg grating.

65. (Once Amended) The optical filter of claim 64, wherein a portion of the at least one of the first and second optical waveguides has an outer transverse dimension of at least 0.3 mm.

B/20

Sub C42

67. (Once Amended) The optical filter of claim 59 further includes a compression device that axially compresses at least one of the first and second tunable optical waveguides, wherein at least one of the respective first and second reflective elements is disposed along an axial direction of the respective first and second optical waveguides.

68. (Once Amended) The optical filter of claim 58, wherein the shape of the first reflective filter function is different than the shape of the second reflective filter function.

Please add claim 70 as follows:

Sub C43 B21

70. (Newly Added) The optical filter of claim 22, wherein the first wavelength band and the second wavelength band overlap spectrally.

"first and second tunable elements".

Independent claim 22 is amended to make clear that the tunable optical filter has a first and second inner core respectively having first and second reflective elements. The inner core is shown in Figure 10 as element 51. Consistent with the amendment to claim 22, claim 23 is amended to recite that the first and second reflective elements include a respective Bragg grating. Claims 24-25 and 27 are amended to depend directly from claim 22, as amended. Claim 29 is amended to read consistent with the language of claim 22, as amended. Claim 30 is amended to depend directly from claim 70. Claim 32 is amended consistent with the aforementioned amendments to claim 1. Claim 36 is amended to provide a proper antecedent basis for the terms recited in claim 32, as amended.

Claim 37 is amended to make clear that the compression-tuned optical filter has a first and second optical waveguide, as well as to include and read consistent with the amendments to claim 1. Claims 39, 42-45 and 51 are amended consistent with the amendment to claim 9, discussed above. Claim 49 is amended to read consistent with claim 37. Claim 54 is amended to read consistent with that discussed above in relation to claim 23. Claim 56 is amended to read consistent with claim 37, as amended.

Claims 58, 61-62, 64-65 and 67-68 are amended to read consistent with the amendments to the corresponding claims discussed.